National Institute of Environmental Health Sciences

Effect of temperature on mortality during the six warmer months in Sydney, Australia, between 1993 and 2004

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Abstract:

Studies of heat-related mortality have been predominantly based on analyses of underlying cause of death as the single indicator of a population's vulnerability to high temperatures. Examination of both underlying and associated causes of death could provide a more comprehensive understanding of the population at risk. This study analyzes the impact of high temperatures on mortality in Sydney, Australia, during the warmer six months (October-March) between 1993 and 2004, using the underlying and associated cause of death due to all-cause, circulatory, and respiratory disease. Some mortality datasets were also divided into two age groups, 0-64 and 65+. A generalized linear model assuming negative binomial distribution was constructed for the daily mortality counts using daily maximum temperature and hourly maximum concentrations of ozone (03) and particulate matter (PM10) as covariates. With the air pollution terms in a model, the change in mortality was estimated to be between 4.5% and 12.1% for a 10 degrees C increase in maximum daily temperature, depending on mortality dataset. When air pollutants were removed from a model, the above mortality percentages changed by -1.1% to 0.9%. When both underlying and associated causes of death were considered, the effect remained the same or became lower. Maximum temperature has been found to have a significant effect on mortality in Sydney, with PM10 and O-3 confounding the association. (C) 2008 Elsevier Inc. All rights reserved.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

Air Pollution: Interaction with Temperature, Ozone, Particulate Matter

Temperature: Extreme Heat, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Morbidity/Mortality, Respiratory Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): circulatory disease mortality

Respiratory Effect: Other Respiratory Effect

Respiratory Condition (other) : respiratory disease mortality

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified